



## Pain SIG Research Review Topic: Sacroiliac Pain

### Introduction:

Low back pain is the leading cause of disability world-wide,<sup>1</sup> and sacroiliac joint (SIJ) dysfunction is estimated to occur in 15-30% of those with non-specific low back pain.<sup>2</sup> Among those who are pregnant, the estimates of pelvic girdle pain (PGP) (which includes SIJ dysfunction) are even higher, estimated to occur in 56% to 72% of the women during pregnancy<sup>3-6</sup> and known to continue on during the postpartum period in 7% to 25% of women, with 20% of these women experiencing serious problems.<sup>5,7-9</sup> Unfortunately, SIJ dysfunction is often not identified, and when it is, it is “frequently undertreated, over-treated and mistreated,”<sup>10</sup> and there are “no clear diagnostic or treatment pathways.”<sup>11</sup>

### Literature Overview:

There is currently no gold standard for SIJ dysfunction as the past gold standard of the SIJ injection has only moderate evidence to support its use.<sup>12,13</sup> SIJ imaging is vital to rule out pathology, but is not reliable for spondyloarthropathies<sup>14</sup> or for women early postpartum, as bone marrow edema in these women can look like sacroiliitis of axial spondyloarthritis.<sup>15</sup> Static symmetry, mobility or movement-based special tests are continuing to be used by practicing physical therapists<sup>16,17</sup> for diagnosis although research has shown poor reliability,<sup>18-22</sup> and validity.<sup>23</sup> The assumption upon which these tests are based, that the sacrum moves a discernable amount that can be visually/manually detected has been not supported by research.<sup>24-26</sup> Current recommendations suggest using pain provocation tests in conjunction with history, physical exam, and diagnostic injections,<sup>10,11,27</sup> although a recent systematic review indicates these tests are best to rule out SIJ dysfunction rather than to rule it in.<sup>28</sup> Other factors that complicate the clinical picture are that sacroiliac pain may arise from articular and extraarticular structures,<sup>29</sup> is agreed by experts to have a biomechanical basis<sup>30</sup> and that biopsychosocial factors can be involved.<sup>31-33</sup>

This author agrees with Palsson et al<sup>33</sup> “Clinicians are encouraged to align their assessment methods and explanatory models with contemporary science to reduce the risk of their diagnoses and choice of intervention negatively affecting clinical outcomes.” This literature review was meant to be a starting point for further investigation for the therapist, especially in areas that may be new information to them.

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### Selected Article Abstracts:

These articles were selected by the author to highlight the literature on the SIJ.

Buchanan P, Vodapally S, Lee DW, et al. Successful Diagnosis of Sacroiliac Joint Dysfunction. *J Pain Res.* 2021;14:3135-3143. doi:10.2147/JPR.S327351

**Background:** Sacroiliac joint (SIJ) pain is one of the most common causes of low back pain, accounting for 15 to 30% of all cases. Although SIJ dysfunction accounts for a large portion of chronic low back pain prevalence, it is often overlooked or under diagnosed and subsequently under treated. The purpose of this review was to establish a best practices model to effectively diagnose SIJ pain through detailed history, physical exam, review of imaging, and diagnostic block. **Methods:** A literature search was performed on the diagnosis of sacroiliac joint pain and sacroiliac joint dysfunction. The authors proposed diagnostic recommendations based upon the available literature and a detailed understanding of diagnosing SIJ pain. **Results:** The practitioner must focus on the history, location of pain, observed gait pattern, and perform key points of the physical exam including sacroiliac provocative maneuvers. If the patient exhibits at least three provocative maneuvers then the SIJ may be considered as a possible source of pain. Additionally, a thorough review of the imaging should be performed to rule out other etiologies of low back pain. In the absence of any pathognomonic tests or examination findings, diagnostic SIJ blocks have evolved as the diagnostic standard. **Conclusion:** The diagnosis of SIJ pain is a multifaceted process that involves a careful assessment including differentiating other pain generators in the region. This involves careful history taking, appropriate physical examination including provocative maneuvers and diagnostic injections. Once the diagnosis is confirmed, long-term solutions may be considered, including recent advances in sacral lateral branch denervation and sacroiliac joint fusion. **Keywords:** sacroiliac joint, SIJ, low back pain, diagnosis, best practices, review

Barnsley L, Paiva J, Barnsley L. Frequency of pertinent MRI abnormalities of the sacroiliac joints of patients without spondyloarthropathies: a systematic review of the literature. *Skeletal Radiol.* 2021;50(9):1741-1748. doi:10.1007/s00256-021-03719-6

### Abstract

**Introduction:** MRI criteria are central to the diagnosis of non-radiographic axial spondyloarthropathy (nr-axSpA). The cardinal feature of nr-axSpA is inflammatory low back pain, which may be difficult to distinguish from highly prevalent non-specific low back pain. This study aims to determine the frequency of relevant MRI findings in the sacroiliac joints (SIJ) of patients without Spondyloarthropathy (SpA), and therefore estimate the specificity of MRI scans for SpA. **Methods:** EMBASE and Medline were searched and limited to English. Titles were screened for relevance, with studies that included primary MRI findings in patients without SpA triggering retrieval. Retrieved papers were reviewed, data extracted by two authors and quality criteria (QUADAS 2) were applied. Findings were considered for asymptomatic and symptomatic individuals. **Results:** The search recovered 2172 articles. Abstracts of 117 were reviewed for full text retrieval, 11 papers met eligibility criteria. These papers described MRI findings of 1180 asymptomatic patients and 1318 with low back symptoms but without SpA. In relevant populations, bone marrow oedema was found in 22% (95% CI 19-25) of asymptomatic and 20%

(95% CI 18-22) of asymptomatic individuals. In all non-Spa patients, sclerosis was found in 13.4% and erosions in 6.5%. **Conclusions:** There is a significant frequency of diagnostically pertinent MRI abnormalities in the SIJ of patients without SpA. These are present in both asymptomatic and symptomatic individuals. Findings, such as oedema and sclerosis, lack specificity and should be interpreted with caution. Erosions are less frequent and are likely more specific for SpA.

Klerx SP, Pool JJM, Coppieters MW, Mollema EJ, Pool-Goudzwaard AL. Clinimetric properties of sacroiliac joint mobility tests: A systematic review. *Musculoskelet Sci Pract.* 2020;48:102090. doi:10.1016/j.msksp.2019.102090

**Background:** Previous systematic reviews revealed poor reliability and validity for sacroiliac joint (SIJ) mobility tests. However, these reviews were published nearly 20 years ago and recent evidence has not yet been summarised. **Objectives:** To conduct an up-to-date systematic review to verify whether recommendations regarding the clinical use of SIJ mobility tests should be revised. **Study design:** Systematic review. **Method:** The literature was searched for relevant articles via 5 electronic databases. The review was conducted according to the PRISMA guidelines. COSMIN checklists were used to appraise the methodological quality. Studies were included if they had at least fair methodology and reported clinimetric properties of SIJ mobility tests performed in adult patients with non-specific low back pain, pelvic (girdle) pain and/or SIJ pain. Only tests that can be performed in a clinical setting were considered. **Results:** Twelve relevant articles were identified, of which three were of sufficient methodological quality. These three studies evaluated the reliability of eight SIJ mobility tests and one test cluster. For the majority of individual tests, the intertester reliability showed slight to fair agreement. Although some tests and one test cluster had higher reliability, the confidence intervals around most reliability estimates were large. Furthermore, there were no validity studies of sufficient methodological quality. **Conclusion:** Considering the low and/or imprecise reliability estimates, the absence of high-quality diagnostic accuracy studies, and the uncertainty regarding the construct these tests aim to measure, this review supports the previous recommendations that the use of SIJ mobility tests in clinical practice is problematic.

Falowski S, Sayed D, Pope J, et al. A Review and Algorithm in the Diagnosis and Treatment of Sacroiliac Joint Pain. *J Pain Res.* 2020;13:3337-3348. doi:10.2147/JPR.S279390

**Introduction:** The sacroiliac joint (SIJ) has been estimated to contribute to pain in as much as 38% of cases of lower back pain. There are no clear diagnostic or treatment pathways. This article seeks to establish a clearer pathway and algorithm for treating patients. **Methods:** The literature was reviewed in order to review the biomechanics, as well as establish the various diagnostic and treatment options. Diagnostic factors addressed include etiology, history, physical exam, and imaging studies. Treatment options reviewed include conservative measures, as well as interventional and surgical options. **Results:** Proposed criteria for diagnosis of sacroiliac joint dysfunction can include pain in the area of the sacroiliac joint, reproducible pain with provocative maneuvers, and pain relief with a local anesthetic injection into the SIJ. Conventional non-surgical therapies such as medications, physical therapy, radiofrequency denervation, and direct SI joint injections may have some limited durability in therapeutic benefit. Surgical fixation can be by a lateral or posterior/posterior oblique approach with the literature supporting minimally invasive options for improving pain and function and maintaining a low adverse event profile. **Conclusion:** SIJ pain is felt to be an underdiagnosed and undertreated element of LBP. There is an emerging disconnect between the growing incidence of diagnosed SI pathology and underwhelming treatment efficacy of medical treatment. This has led to an increase in SI joint

fixation. We have created a clearer diagnostic and treatment pathway to establish an algorithm for patients that can include conservative measures and interventional techniques once the diagnosis is identified. **Keywords:** sacroiliac joint, SIJ pain, sacroiliac joint dysfunction, sacroiliitis, sacroiliac joint fusion

Saueressig T, Owen PJ, Diemer F, Zebisch J, Belavy DL. Diagnostic Accuracy of Clusters of Pain Provocation Tests for Detecting Sacroiliac Joint Pain: Systematic Review With Meta-analysis. *J Orthop Sports Phys Ther.* 2021;51(9):422-431. doi:10.2519/jospt.2021.10469

### Abstract: Objective:

To assess the diagnostic test accuracy of pain provocation tests for the sacroiliac joint. Design. Systematic review of diagnostic test accuracy. Literature Search. Seven electronic databases and reference lists of included studies and previous reviews were searched. Study Selection Criteria. Studies investigating the diagnostic accuracy of clusters of clinical tests for sacroiliac joint pain were included. Data Synthesis. Bivariate random-effects meta-analysis was employed. Risk of bias and applicability concerns were assessed using the revised Quality Assessment of Diagnostic Accuracy Studies tool, and the Grading of Recommendations Assessment, Development and Evaluation (GRADE) tool was used to judge credibility of evidence. **Results:** From 2195 records identified in the search, 5 studies were included that assessed clusters of pain provocation tests for the sacroiliac joint. The estimated positive likelihood ratio was 2.13 (95% confidence interval [CI]: 1.2, 3.9), the negative likelihood ratio was 0.33 (95% CI: 0.11, 0.72), and the diagnostic odds ratio was 9.01 (95% CI: 1.72, 28.4). The GRADE ratings for the outcomes were of very low certainty. Assuming a point prevalence of sacroiliac joint pain of 20%, we calculated a positive posterior probability of 35% (95% CI: 32%, 37%) and negative posterior probability of 8% (95% CI: 6%, 10%). **Conclusion:** A positive result on a sacroiliac joint pain provocation test cluster gives the clinician 35% certainty of having correctly identified sacroiliac joint pain. Clusters of pain provocation tests for the sacroiliac joint do not provide sufficient diagnostic accuracy for ruling in the sacroiliac joint as the source of pain. Clinicians can rule out the sacroiliac joint as the source of pain with more confidence: the negative posttest probability indicates that the clinician can conclude with 92% certainty that a negative test result is correct.

Palsson TS, Gibson W, Darlow B, et al. Changing the Narrative in Diagnosis and Management of Pain in the Sacroiliac Joint Area. *Phys Ther.* 2019;99(11):1511-1519. doi:10.1093/ptj/pzz108

The sacroiliac joint (SIJ) is often considered to be involved when people present for care with low back pain where SIJ is located. However, determining why the pain has arisen can be challenging, especially in the absence of a specific cause such as pregnancy, disease, or trauma, when the SIJ might be identified as a source of symptoms with the help of manual clinical tests. Nonspecific SIJ-related pain is commonly suggested to be causally associated with movement problems in the SIJ(s)—a diagnosis traditionally derived from manual assessment of movements of the SIJ complex. Management choices often consist of patient education, manual treatment, and exercise. Although some elements of management are consistent with guidelines, this Perspective article argues that the assumptions on which these diagnoses and treatments are based are problematic, particularly if they reinforce unhelpful, pathoanatomical beliefs. This article reviews the evidence regarding the clinical detection and diagnosis of SIJ movement dysfunction. In particular, it questions the continued use of assessing movement dysfunction despite mounting evidence undermining the biological plausibility and subsequent treatment

paradigms based on such diagnoses. Clinicians are encouraged to align their assessment methods and explanatory models with contemporary science to reduce the risk of their diagnoses and choice of intervention negatively affecting clinical outcomes.

Laslett M. Clinical Diagnosis of Sacroiliac Joint Pain. *Tech Orthop*. 2019;34(2):76-86.  
doi:10.1097/BTO.0000000000000333

### Summary:

There is a need to establish a standardized clinical examination, based on best available evidence, that identifies those patients with persistent back and buttock pain whose symptoms arise from the sacroiliac joint. This clinical examination is the first step in the selection of patients for controlled and guided diagnostic intra-articular block (the reference standard). This in turn is the prerequisite for selection of patients for minimally invasive therapies such as intra-articular steroid injection or for surgical fusion. The use of pain location and results from pain provocation tests is described within the context of a clinical reasoning algorithm. A cluster of at least 2, preferably 3 provocation tests in the absence of any clear diagnosis of a pain source other than the sacroiliac joint, has a sensitivity of 91% and specificity of 89%. The clinical examination described is reliable, requires no special equipment, and is available from trained clinicians in most developed countries. Key Words: SIJ pain—clinical diagnosis—diagnostic accuracy—  
intraarticular injection—pregnancy-related pelvic girdle pain.

This Research Review was provided by Deborah B. Riczo, PT, MEd, DPT, founder of Riczo Health Education. She is the author of “Sacroiliac Pain: understanding the Pelvic Girdle Musculoskeletal Method,” and “Back and Pelvic Girdle Pain in Pregnancy and Postpartum: finding relief using the Pelvic Girdle Musculoskeletal Method,” and provides continuing education to health care providers through APTA pelvic health, Physiopedia and Motivations. You can find her most recent publication in the Orthopaedic Nursing Journal, “What you need to know about sacroiliac dysfunction.”<sup>34</sup> You can contact Deborah by email at [Deborah@RiczoHealthEducation.com](mailto:Deborah@RiczoHealthEducation.com) or on Instagram/Facebook @RiczoHealthEducation.